

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

Title V (draft) No. V-99-014
Safety-Kleen Systems, Inc. - New Castle Recycle Center
Smithfield, Kentucky
June 5, 2000
STUART ECTON, B.S. CHEMICAL ENGINEERING/ REVIEWER
Plant I.D. # 104-1780-0005
Application Log # F912

SOURCE DESCRIPTION:

The New Castle Recycle Center produces and reclaims organic solvents from raw materials and byproducts, used solvents and from mixtures. In addition, the facility blends solvents with little or no recyclable value, along with distillation bottoms and other high BTU materials into a supplemental fuel. The facility uses several primary types of treatment including: distillation, evaporation, mixing, blending and filtering.

Generally, the materials handled at the facility can be separated into four categories: recyclable chlorinated solvents, recyclable flammable solvents, supplemental fuels, and solid fuels. Recyclable solvents are received in bulk and container form and pumped in storage tanks prior to processing.

Solvents received in drums will be normally unloaded at Truck Station No.6 or Truck Station No.2 and ultimately pumped into the respective tank farms prior to solvent recovery or fuel blending. The incoming drums are staged in Container Storage areas 2A and 2B prior to processing.

The New Castle Recycle Center utilizes two separate pieces of equipment for the processing of materials shipped to the facility in containers. Historically, materials shipped in containers have been more difficult to manage than those that arrive at the facility in bulk tanker trucks. The containers often contain a large amount of solidified material, debris and sludges. Approximately half of all the material that is processed arrives at the facility in containers. The facility operates two pieces of equipment to manage these containerized materials. The Automatic Drum Decanting System (ADDS) is utilized to empty the contents of drums that contain liquids and semi-solids. The Shredding System (Shredder) is utilized to manage those materials that contain solid material.

Typically drums containing primarily liquids and semi-solid materials are processed through the ADDS. In the ADDS system, each drum passes across a loading system into an airlock where the atmosphere is nitrogen purged. The drum is then sent to a shear chamber to cut off the bottom of the drum. The contents fall into the fluid recovery system for further handling. The sheared drums are then compressed. The recovered fluid is then pumped to the storage tanks.

The shredder System manages liquid and semi-solid materials. Drums are loaded onto a conveyor that transports the containers to the drum elevator. The drums are lifted to the infeed hopper, through air lock, and into the nitrogen atmosphere in the processing portion of the system. After entering the process equipment, the drums are processed through a primary and then a secondary shredder. The shredders shred the drums and

separate the container from its contents. Once shredded, the materials can be routed to 5 gallon pails, lugger boxes, or the hydropulper unit for further processing.

Automatic Drum Decanting System (ADDS) Process Description

After completing the laboratory receipt analysis, each container is dispositioned as to how it will be managed, i.e., recoverable solvent, fuel blending, etc. A determination is also made as to which piece of process equipment will be used to process the container. The ADDS is utilized to process those materials that are in a liquid or semi-solid matrix. By changing valve configurations, material may be pumped from the ADDS system to a distillation process feed tank, a fuel blending tank, or any other permitted storage tank.

The ADDS system is a completely enclosed automated drum processing system that is monitored and controlled by a computer system. Since all container processing is conducted within a totally enclosed airtight system, potential exposure of personnel and the environment are minimized. The entire system is operated by two operators, one to monitor the control system and the other to load containers onto the conveyor track.

The ADDS system is operated by loading drums of material onto a conveyor roller track. The drums then enter the process, one at a time, through a nitrogen purged airlock system. As a drum enters the airlock, the exterior door closes and the oxygen level is measured by the computer system. The oxygen level must be below 5% in order for the control system to allow the process to continue. Keeping the oxygen percentage below 5% ensures that while processing flammable materials, a fire cannot occur. If the oxygen level within the ADDS system is not below 5%, a valve is opened and nitrogen flows into the airlock chamber until the oxygen level is satisfactory. Once the oxygen level is below 5%, the interior airlock door opens which allows the drum to enter the process equipment. The interior airlock door closes and the oxygen level is measured in the process chamber. If the oxygen level in this area is not below 5%, it also is purged with nitrogen. When the oxygen level is satisfactory, the control system allows the process to continue. The drum is processed by shearing off the bottom of the container. The contents of the container then flow into a mixing vessel where the contents are blended with other container. From there, the material is pumped to the appropriate tank. After the drum has been emptied by gravity, a hydraulic cylinder then crushes the container to remove any residues that may remain. These materials flow into the same vessel with the liquids. The resulting crushed drum and drum bottom are then shredded by an internal metal shredder. The shredded metal is then washed and passed through a magnetic separator. The magnetic separator removes any nonferrous debris that may be present. The scrap metal is then sold to various steel smelters where it is melted and reused.

Shredding System Process Description

The shredding System typically is utilized to manage those materials that contain solid material. This system may be utilized for materials dispositioned several different ways. Drums containing both liquid and solid material may be shredded, conveyed into a hydropulper (mixing vessel), blended into fuel, and pumped to a tank for offsite shipment. The Shredding System is also utilized to shred drums consisting entirely of solid material. The shredded solid material may then be loaded in roll-off boxes for shipment offsite for incineration or energy recovery at a cement kiln. For shredded solid material that contains absorbed liquids, it may be further processed in a squeezer press to remove the liquids. The solid materials from the squeezer press are then shipped offsite for incineration or energy recovery. The liquid material is then shipped offsite for incineration or energy recovery.

The Shredder System is a completely automated and totally enclosed unit purged with nitrogen to ensure that the oxygen level inside the system remains below 5%. The lowered oxygen level ensures that a fire does not occur within the system.

The system is operated similar to the ADDS system in that containers are loaded onto a roller conveyor where they pass through an airlock system into the process equipment. The oxygen level in the airlock and process chamber must be below 5% before the process is allowed to continue. After the control system verifies that the oxygen level is satisfactory, the drum is allowed to be processed through the shredder. The shredded material is then managed as previously described. Prior to exiting the shredding system, ferrous metal is removed utilizing a magnetic separator. The ferrous metal is then washed utilizing the shredding system hydropulper. The washed metal is then shipped offsite to various steel smelters where it is recycled to reuse.

Squeezer System

The Squeezer System is utilized to process solid materials from the Shredder System that contain absorbed liquids. The Squeezer System processes shredded material into three streams; dry solid material, liquid and scrap metal. The dry solid material is shipped to a cement kiln for energy recovery or to an incinerator. The liquid material is blended into fuel and shipped to a cement kiln for energy recovery or to an incinerator. The scrap metal is washed utilizing a cleaning solvent and sold to various steel smelters for reuse.

The Squeezer equipment consists of an enclosed nitrogen purge system. The system is operated by feeding material via a screw conveyor into the Squeezer unit. The unit functions by applying hydraulic pressure to squeeze the material in a chamber surrounded by a steel screen. The liquid material passes through the screen while the solid material is discharged into a magnetic separator where ferrous metal is separated. The ferrous metal is collected for cleaning prior to shipment to a smelter for reuse. The remaining solid material is shipped offsite to a cement kiln for energy recovery or to an incinerator.

Tank Storage

There are 64 above ground tanks at the New Castle Recycle Center, 45 of which are permitted for the storage of hazardous waste. There are no underground storage tanks. The total storage capacity is 913,300 gallons. The tank storage capacity permitted to hazardous waste storage is 620,500 gallons. Tanks at the facility are utilized to store a variety of materials which include:

- Blend and mix tanks
- Boiler fuel storage
- Metal wash solvent storage
- Wastewater storage
- Waste solvent storage
- Groundwater collection
- Finished product storage

Secondary containment systems are designed, installed, and operated to prevent any migration of

wastes or accumulated liquid out of the system to the soil, ground water, or surface water. All secondary containment systems are constructed of reinforced concrete.

All tanks are equipped with an ultrasonic level indicator and alarm system. Prior to transferring any material into a tank, the available volume is determined. The liquid level alarm setting is assigned at 85% of tank capacity. Upon the sounding of a high alarm, the material handler manually shuts down any pump(s) feeding the tank.

Tanker Truck Loading and Unloading

Tanker trucks coming into the facility are emptied via hose connection to the various storage tanks. Tanker trucks that are leaving the facility are bottom loaded at truck station # 4.

COMMENTS:

This facility is subject to several MACT standards. The most significant MACT standard is 40 CFR 63 Subpart DD, National Emission Standards for Hazardous Air Pollutants from off-site Waste and Recovery Operations. This MACT standard requires the installation of a *thermal oxidizer* which will destroy VOC/HAP emissions from the following affected facilities at Safety-Kleen:

E.P. 03 (VP1, P1)	Evaporation, Vacuum System and Distillation Process: Distillation Column, Reboilers, Heat Exchangers and associated pipeline equipment. Constructed between 1970 and 1985.*
E.P. 21 (MP02)	Automatic Drum Decant System (ADDS)/Shredder Constructed 1991.
E.P. 23 (MP01, MP03)	Drum Shredder, N ₂ purge, Shaker Screen, Hydrapulper Constructed 1991.
E.P. 24 (-)	Solids Separator (Screw Press, Squeezer System) Constructed 1996.

* Safety Kleen has indicated that this process is not likely to ever operate again.

Subpart DD also sub-references applicable requirements in CFR 63 Subpart OO, 40 CFR 63 Subpart PP, and 40 CFR 61 Subpart V. 40 CFR 63 Subparts QQ, RR and VV do not apply because there are no surface impoundments, individual drain systems or oil/organic water separators, respectively. This was verified during a site visit.

TYPES OF CONTROLS:

Thermal Oxidizer
Leak Detection and Repair (LDAR) Program
Various closed vent systems and seals

EMISSION FACTORS:

AP-42 For combustion of Fuel Oil and Natural Gas
SOCMI Fugitive Emission Factors
AP-42 (TANKS 3.1)
AP-42 Emission Factors for loading tanker trucks

APPLICABLE REGULATIONS:

401 KAR 59:015, New indirect heat exchangers.
401 KAR 63:680 (40 CFR 63 Subpart DD), **National Emission Standards for Hazardous Air Pollutants from off-site Waste and Recovery Operations.**
401 KAR 63:900 (40 CFR 63 Subpart OO), National Emission Standards for Tanks-Level 1
401 KAR 63:920 (40 CFR 63 Subpart PP), National Emission Standards for containers.
401 KAR 57:035 (40 CFR 61 Subpart V), National Emission Standards for Equipment Leaks.
401 KAR 59:485 (40 CFR 60 Subpart Kb) Standards of performance for volatile organic liquid storage vessels for which construction, reconstruction or modification commenced after July 23, 1984.

EMISSION AND OPERATING CAPS DESCRIPTION:

NA

PERIODIC MONITORING:

Semiannual method 9 readings are required to show compliance with Regulation 401 KAR 59:015. All other monitoring requirements can be found in the applicable MACT, NESHAP or NSPS Subpart.

OPERATIONAL FLEXIBILITY:

No applicable regulations limit the amount or type of solvents that can be processed at this facility. This represents significant operational flexibility.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or record keeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.